

Remarks

Claims 1-22 and 26-29 are pending in the application. Claims 1-12 and 26-29 have been withdrawn and claims 23-25 have been canceled. Claim 13 has been amended.

The specification at page 24, line 11 has been amended to correct a typographical error. The sentence beginning on line 5 has been corrected to recite that "layer 8 is further formed on the functional material layer 7". The typographical error is apparent from Fig. 3.

Claim Rejections Under 35 U.S.C. §102(b)

Claims 13-22 have been rejected under 35 U.S.C. §102(b) as being anticipated by Yamada et al. (US 2002/0190814). Applicants respectfully traverse the rejection. Claim 13 has been amended to recite that the first wurtzite layer is formed directly on the substrate so as to be in contact with an entire surface of the substrate. The laminate of claim 13 includes the substrate, the first wurtzite crystalline layer, the functional material layer and the second wurtzite crystalline layer being stacked in this order so as to have a four layer structure. Support for the amendment to claim 13 is found in the PCT specification at paragraph [0078] (English specification at page 24, lines 1-12); lines 1 to 2 of paragraph [0084] (English specification at page 25, lines 19-23; lines 5 to 6 of paragraph [0108] (English specification at page 33, lines 23 to 25), and Fig. 3.

Yamada et al. fails to disclose the claimed laminate structure. In the structure disclosed by Yamada, the lower electrode 61 is formed above the substrate via the adherence electrode layer 24, the silicon oxide layer 53, or the insulating layer 54. This structure is completely different from the structure of amended claim 13, i.e., the structure in which "a first wurtzite crystalline layer is formed directly on the substrate so as to be in contact with an entire surface of the substrate." Moreover, Yamada fails to disclose a four layer structure in which the substrate, the first wurtzite crystalline layer, the functional layer and the second wurtzite crystalline layer are stacked in this order. Because Yamada et al. does not anticipate the laminate of claims 13-22, the rejection under 35 U.S.C. §102(b) should be withdrawn.

Claim Rejections Under 35 U.S.C. §103(a)

Claims 13-22 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Masuo et al. (JP 57-48820) in view of Higaki et al. (US 5426340). The Examiner acknowledges that Masuo fails to disclose that the first wurtzite crystalline layer has a thickness of between 50 nm and 200 nm or that the functional material layer is made of an elementary substance of molybdenum or tungsten or a compound containing at least one of molybdenum and tungsten and having a thickness of between 100 nm and 300 nm. Nevertheless, the Examiner contends that it would have been obvious to combine the thicknesses and materials of the piezoelectric and electrode layers of Higaki et al. with the surface acoustic wave device of Masuo et al. for the benefit of using an electrode material having low resistivity and that can be formed at low temperature.

Applicants respectfully traverse the rejection. As discussed above, claim 13 has been amended to recite that the first wurtzite layer is formed directly on the substrate so as to be in contact with an entire surface of the substrate. The laminate of claim 13 includes the substrate, the first wurtzite crystalline layer, the functional material layer and the second wurtzite crystalline layer being stacked in this order so as to have a four layer structure. Masuo et al. fails to disclose the laminate structure. In Masuo et al., the electrode 12 (corresponding to the functional material layer) does not cover an entire surface of the first wurtzite piezoelectric (corresponding to the first wurtzite crystalline layer) (see Masuo et al. at Fig. 2 and Abstract). Furthermore, Higaki et al. discloses the arrangement in which the electrode (specifically, the interdigital transducer 5) is made of molybdenum or tungsten, but this electrode does not cover an entire surface of the piezoelectric layer 4 positioned below the electrode as illustrated in Fig. 8 or elsewhere.

The Examiner contends that Higaki et al. teaches a surface acoustic wave device in which the piezoelectric layer has a thickness of between 50 nm and 200 nm (col. 8, lines 50-55) and that the functional material is made of an elementary substance of molybdenum or tungsten or a compound containing at least one of molybdenum and tungsten (col. 6, lines 46-56) and having a thickness of between 100 nm and 300nm (col. 8, lines 50-55).

Applicants respectfully submit that the Examiner has misinterpreted the disclosure of Higaki et al. for the following reasons. On the basis of the disclosure of Higaki et al. at column 6, lines 46-56 that the electrode (specifically, the interdigital transducer 5) is made of molybdenum or tungsten, and such disclosure in Higaki et al. at column 8, lines 50-55 that the layer constituting the grounding electrode has a thickness of 100 Å to 1 µm, the Examiner alleges that Higaki et al. teaches that the functional material layer has a thickness of 100 to 300 nm. Applicants respectfully disagree because the grounding electrode described in Higaki et al. at column 8, lines 50-55 corresponds not to the electrode described in column 6, lines 46 to 56, but to the grounding electrode described in column 8, lines 10-14. Furthermore, at column 8, lines 10-14, molybdenum or tungsten is not described as an example of a material for the grounding electrode. Thus the Examiner's contention concerning the thickness of the functional material is unsupported by Higaki et al.

As discussed above, the laminate structure of claim 13 is completely different from the structure described in Masuo et al. Higaki et al. does not make up for the deficiencies of Masuo et al. Accordingly, Applicants respectfully request withdrawal of the rejection of claims 13-22 under 35 U.S.C. §103(a) based on Masuo et al. in view of Higaki et al.

Conclusion

Accordingly, claims 13-22 are believed to be allowable and the application is believed to be in condition for allowance. A prompt action to such end is earnestly solicited.

Should the Examiner feel that a telephone interview would be helpful to facilitate favorable prosecution of the above-identified application, the Examiner is invited to contact the undersigned at the telephone number provided below.

Should a petition for an extension of time be necessary for the timely reply to the outstanding Office Action (or if such a petition has been made and an additional extension is necessary), petition is hereby made and the Commissioner is authorized to charge any fees (including additional claim fees) to Deposit Account No. 18-0988.

Respectfully submitted,

RENNER, OTTO, BOISSELLE & SKLAR, LLP

/Mark D. Saralino/

Mark D. Saralino
Reg. No. 34,243

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The Keith Building
1621 Euclid Avenue
Nineteenth Floor
Cleveland, Ohio 44115
(216) 621-1113